The bear facts on black bear biology and ecology

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Through years of study and research, Department of Fish and Game (DFG) biologists have developed an understanding of California black bears. But even though piles of literature, studies, and documents exist, DFG scientists

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continue to learn even more about the complexities and capabilities of California black bears.

Description

Black bears are large-bodied animals that have a small, narrow head, powerful limbs, and small ears. Black bears vary in color from tan or brown to black. Typically they are dark brown with a brown muzzle and, occasionally, have a small white chest patch. Adult females weigh 100-200 pounds, whereas adult males are larger, at 150-350 pounds, though individuals over 600 pounds have been taken by hunters in California. Black bears have five toes, each with a well-developed claw, on both front and hind feet, and teeth adapted for feeding on both plant and animal matter. Black bears are very good climbers, and they will quickly scale a tree to avoid a predator if they cannot outrun it.

Current Range and Distribution

Black bears are distributed throughout much of North America. In California, they are common with a population

Black bear range in California

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estimate between 25,000-35,000. They can be found mostly in mountainous areas above 3,000 feet.

Habitat and Food Preferences

Typical black bear habitat is characterized by mountainous terrain, diverse under story vegetation, and an abundance of seasonal fruits, berries, and nut crops. Trees are of prime importance to bears because they provide food and escape from predators in addition to winter dens for some. Meadows are very important in spring and early summer when these areas provide food (grasses, sedges, tubers, and various fruits and berries). Bears commonly consume ants and other

Far left, adult black bear. Above, California black bears have a range of colors from black to a lighter brown.

insects in summer, but prefer nut crops, especially acorns, and manzanita berries in the fall.

As omnivores, black bears will eat whatever seems edible. Mostly they are plant eaters, but they have been reported catching and consuming young deer fawns. Bears frequently adapt to human presence, often because bears are attracted to human garbage, pet food and other food items. In suburban areas and mountain communities, bears may damage private property while foraging. These events are most likely to occur in spring if natural foods are scarce, or in late summer and fall, especially during years of poor berry and acorn yields.

Reproduction

Bears mate in June and July. Reproductive success of black bears is related to the abundance of high quality summer and fall foods. Although black bears are opportunists and will consume a wide variety of plant and animal foods, their simple stomachs are inefficient at extracting nutrients from plant matter. They require berries, acorns, and other highly-digestible plant foods to provide them with sufficient nutrition to meet their reproductive requirements. A diet of grasses and forbs may sustain bears, but they generally lose weight when feeding on these items for an extended period of time.

Black bears exhibit several remarkable adaptations. One of these is termed "delayed implantation." An adult female will carry a fertilized egg in her womb for many months. The egg is ready to attach itself to the uterine wall and begin developing into a fetus, but won't until the female's body gives some unknown signal. This adaptation allows bears to time the birth of their cubs, so they are not born too early or too late. It also gives the mother a way out if food is scarce since she has not accumulated enough fat by the time she settles into her den to hibernate, the egg will spontaneously abort. Some biologists see this neat trick as a natural mechanism to control population.

Wild female bears in California reproduce when they are 4 to 5 years old. They generally breed every other year and produce two to four cubs per litter. The young are born around the first of February while the sow is

DFG photos by staff

Above, black bear habitat. Below, black bear tracks.

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Above, as omnivores, black bears will eat insects. Below a black bear forages on a tree.

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hibernating. The newborn cubs weigh less than a pound at birth, and will continue to develope while suckling. They emerge with the sow from their dens in April or May at 5 to 7 pounds.

The cubs follow their mother learning everything she does including how and where to find food, and what is dangerous and to be avoided. Unruly cubs are often disciplined by their mother's growling or grunting, and she will even swat cubs who have not responded to her vocalizations. Some cubs remain with the sow for up to two years before they become independent and drift away.

Hibernation

Once a black bear begins hibernating, it can doze for many months with a body temperature of 88 degrees or higher, which is within 12 degrees of summer levels body temperature. By contrast, the body temperature of smaller hibernators, such as marmots, chipmunks, and ground squirrels, may drop below 40 degrees. These smaller creatures are known as the "true hibernators" while bear inactivity has been termed "seasonal lethargy." For simplicity, we will refer to the inactivity of bears during the winter as hibernation.

Bears can go on slumbering because of their warm fur, lower tendency to lose heat and large body mass allow them to better retain body heat. This, in turn, enables them to cut their metabolic rate in half. Black bears keep their heads and torsos warm enough during hibernation so they can wake if disturbed, although they require a few minutes to awaken.

During hibernation, black bears live off their own fat. Their cholesterol levels are more than twice what they are in summer (more than twice as high as most people). But bears show no signs of hardening of the arteries or the formation of cholesterol gallstones. Research has shown that hibernating bears generate a form of bile acid that, when administered to people, dissolves gallstones, eliminating the need for surgery. Weight loss during hibernation is extreme. Male black bears will typically drop between 15 and 30 percent of their body weight, while reproductive sows can lose up to 40 percent. Despite this large weight loss, over 90 percent of black bears survive the winter.

DFG photos by staff

Above left and right, natural foods like manzanita berries and insects. Below, a bear peers out from a den.

Bears appear to maintain their muscle mass and tone during the three-to-four month hibernation period. Even though they are meeting all their energy requirements by metabolizing fats, they do not lose muscle in the process. They seem to be able to use urea (a nitrogen-rich waste product in the blood) to make new protein. For humans, unlocking this biochemical mystery would greatly assist with dieting and long term fasting to lose weight.

Bears possess another fascinating physiological adaptation : re-build bones during hibernation. Bears regenerate and repair bones by a mysterious mechanism that researchers hope may someday help provide a cure for degenerative arthritis and other bone diseases.

Behavior

Because of their very short tails and long hair, bears cannot use tail or torso to send signals through body language as some other creatures do. This may explain why the head, neck and mouth are used so much to communicate. Walking with head held below the shoulders is likely to result in some type of aggressive behavior. A whole range of facial and mouth expressions are used to intimidate one another including snarling, opening and closing the mouth rapidly while salivating, baring teeth and making chomping (clacking) noises often indicate an agitated bear. A bear will sometimes bluff-charge an intruder by running full speed at the intruder and stopping just short. This is usually a strong signal for the intruder to leave the area.

As additional studies reveal greater insight into bears, their habits, habitat needs and physiology, DFG biologists expect to gain a better understandingabout bears, their management and interactions between bears and people.

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